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Evans

Dated 16 September 2004

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18 JUL 03 0823645-1 813863
P01/7700 01 00-0316869.7

THE PATENT OFFICE

18 JUL 2003

NEWPORT

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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

MSPWNECP/7/03

2. Patent application number

(The Patent Office will fill in this part)

0316869.7

18 JUL 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

HUGH PETER GRANT ~~THE PATENT OFFICE~~ KELLY
47 CROWSTONE RD,
WESTCLIFF ON SEA
ESSEX SS0 8BG

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

6320931001

4. Title of the invention

METHOD OF OPERATION FOR A SELF-PROTECTING
WAVE ENERGY CONVERSION PLANT

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

H P KELLY
47 CROWSTONE RD
WESTCLIFF ON SEA
ESSEX SS0 8BG

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 9

Claim(s) 1

Abstract 1

Drawing(s) 3

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

H.P.G. Kelly

Date 17th July 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

H-P.G. KELLY 01702-610189

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Notes

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Method of operation for a self-protecting wave energy conversion plant.

The following invention relates to wave energy conversion plants, or "wave farms", used to capture sea wave energy & convert this into electricity.

In my co-pending applications, EP1196691
EP1196690, means are described

for converting the energy of sea waves into electricity by the use of "point-absorbers" - or as they are more commonly known, floats - . These cause relative movement between the stator(s) & armature(s) of one or more linear generators, as they undulate up & down with the motion of the sea waves acting upon them. The wave energy is thus converted directly into electricity.

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sea waves to drive mechanical to electrical energy conversion means, uses the energy generated by the wave converter(s) themselves to either remove from the sea or submerge in the sea - either wholly or in part - the point absorbers, in the event of inclement conditions, to an extent sufficient to avoid damage thereto.

It will be appreciated that although sea storms may whip-up quite quickly, it takes measurable time for them to reach their full ferocity.

According to an aspect of the invention concerning the self-protection operation of a wavefarm equipped with a multiplicity of converters, means are used, in response to inclement conditions, for channelling the energy generated by one or more

converters still operative in the sea, to power the extraction or submerging operation of the other converters. This may take place on a 'row by row' basis, until all but the last one or two converters have been operated on. According to a feature of this aspect of the invention, storage means may be accommodated within the wave farm, for example one or more storage batteries, for feeding the energy necessary to the last of the converters for extraction / submerging of their respective point-absorbers.


It will be ~~readily~~ appreciated that the concept of the invention disclosed herein is ~~readily~~ readily applicable to wave farms equipped with linear generators, as mentioned previously. In the event of storm conditions, the electrical energy generated by still operative converters is simply supplied to other converters - now

operating in linear motor mode - for the successful
extinction or submersion of their respective point
absorbers. Once all but the last few, or even one,
converters remain operative, electrical batteries, or
flywheel/generator, storage means or are connected
to these to effect their self-protection operation.

It will be appreciated that this means of operation
may take place assisted - should it be so desired -
by power supplied from a land line or similar, if
available.

The invention will now be described with reference to
the accompanying drawings in which :-

Fig 1 shows a wave farm equipped with a
multiplicity of wave energy converters.

Fig 2 shows the self-protection self-powered
aspect of the invention  in operation and

transform to the nearest shore. The power generated by each is ^{first} conjoined in a control means unit, 18.

As is known, storm conditions may prevail occasionally. In this case, it may be necessary to extract the point absorbers from the sea (or submerge them), to avoid damage thereto & the linear generators powered by them.

Referring to Fig 2, such operation is effected by ^{energy supplied by} using } converters remaining in the sea, 19 & 20 & 21 to withdraw 22, and so on until all but the last one or two remain. This is effected by causing the control means unit 18 to switch selected generators from linear generator mode to linear

motor mode, such that the electrical power generated by those converters remaining in the sea is used to drive these new linear motors to extract their floats into protective canities 23 until such time as the storm has abated.

Clearly the last remaining converters cannot power themselves out of the sea. Therefore battery storage means, (previously charged by the

wave converters), or a flywheel electrical energy storage means, similarly charged, 24, are then connected by the control means unit 18 to these last converters to effect their withdrawal (raising as linear motors) of their respective point absorbers from the sea.

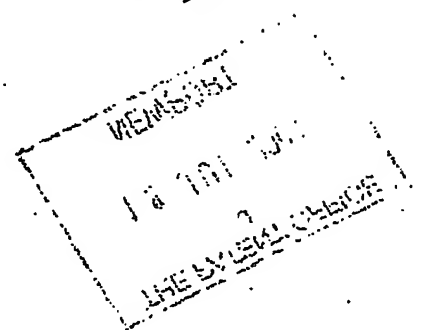
A waveform showing all of the point absorbers

withdrawal is shown in Fig 3.

It will be appreciated that in a uranium
having several thousand individual energy converters,
batches of converters may be extracted at a time,
so speeding up the process. Typically it may
take less than five seconds to effect withdrawal
of, say, a batch of one hundred converters out
of a total of three thousand, thus the overall

extraction time is only of the order of one hundred
to fifty seconds, or less than three minutes,
being well within the time ^{needed} for a storm to
reach its full ferocity.

Numerous variations will be apparent to those
skilled in the art.



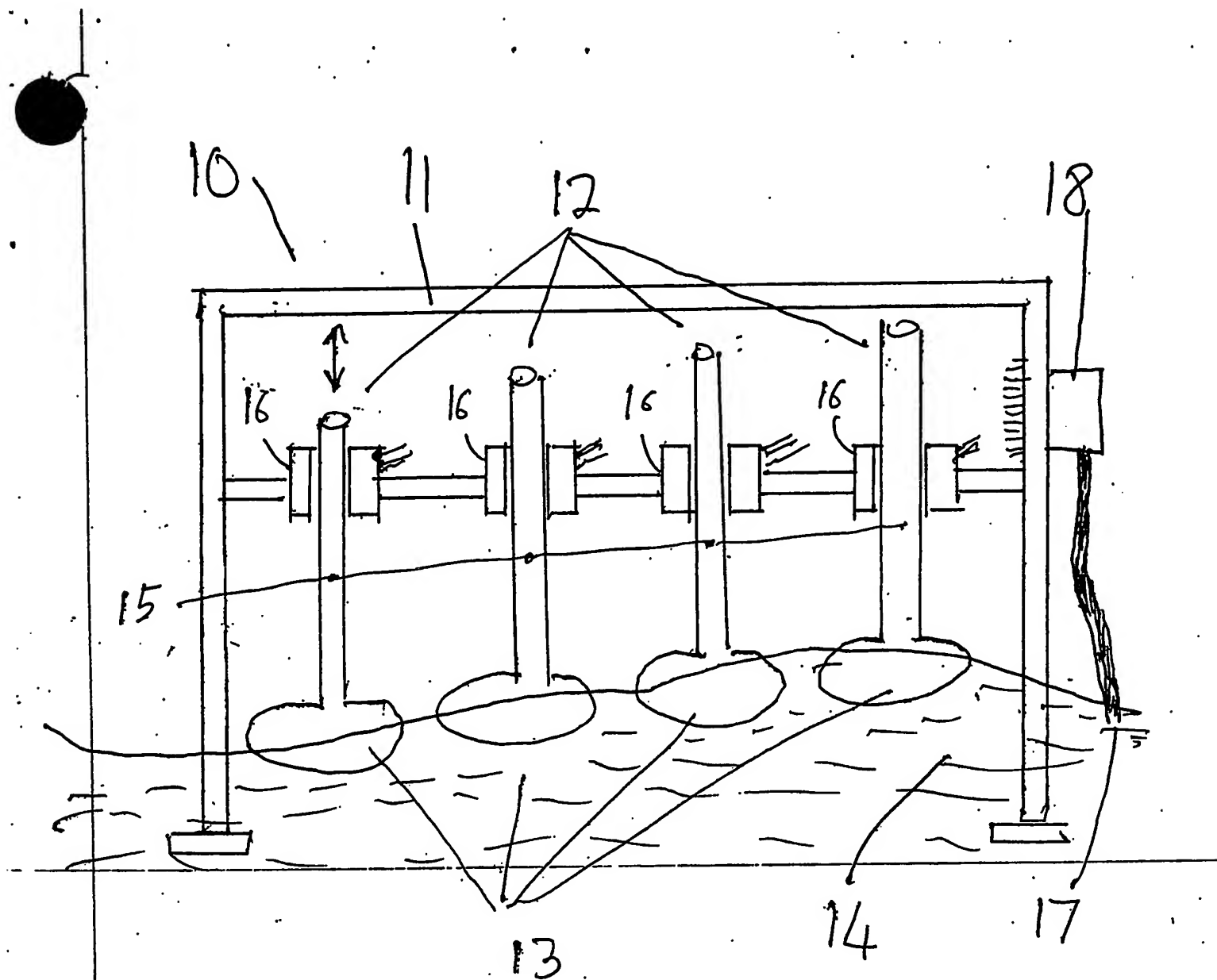


Fig 1

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Hans-Peter Garville (20)

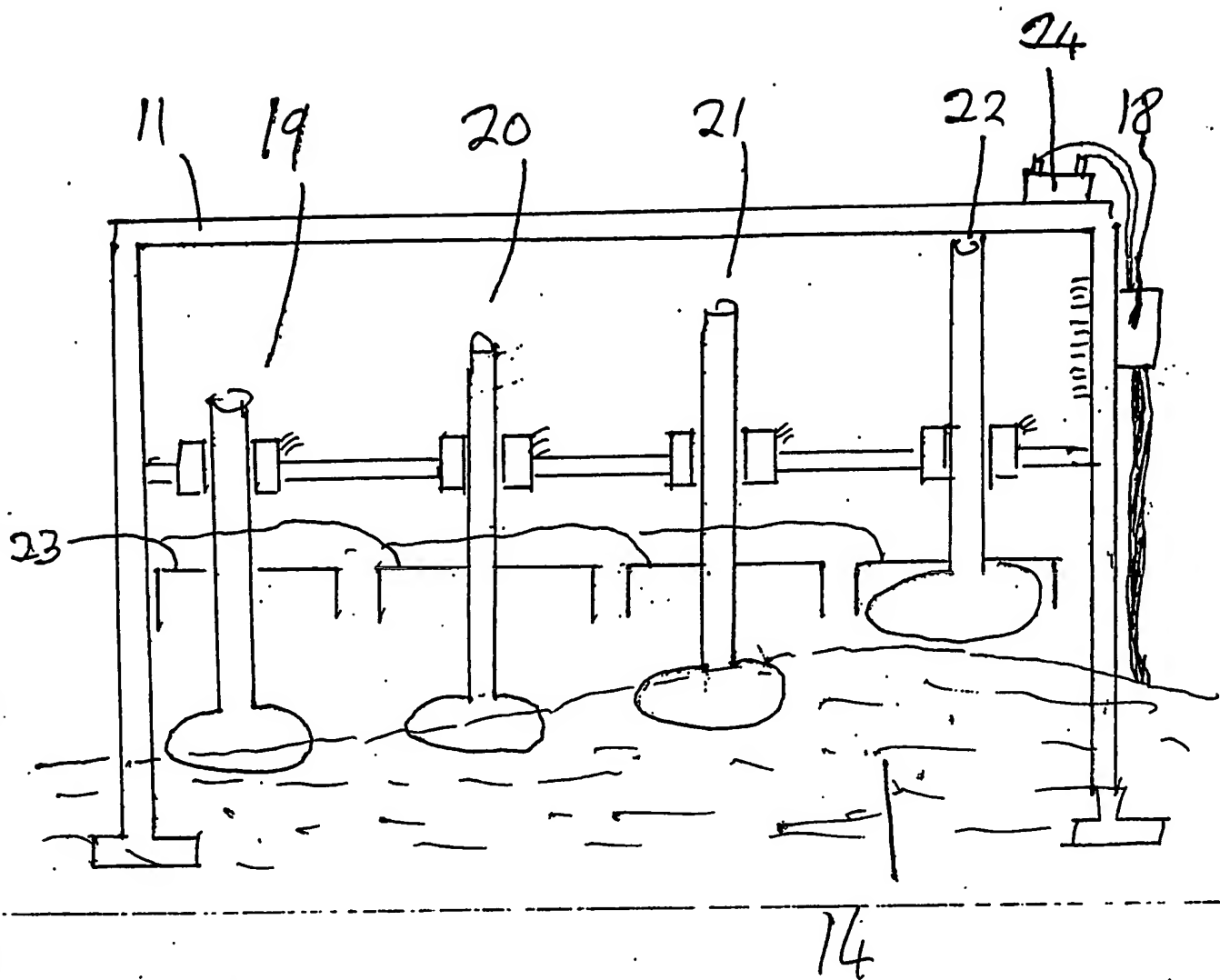


Fig 2

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 Hugst-Peter Granville LLC

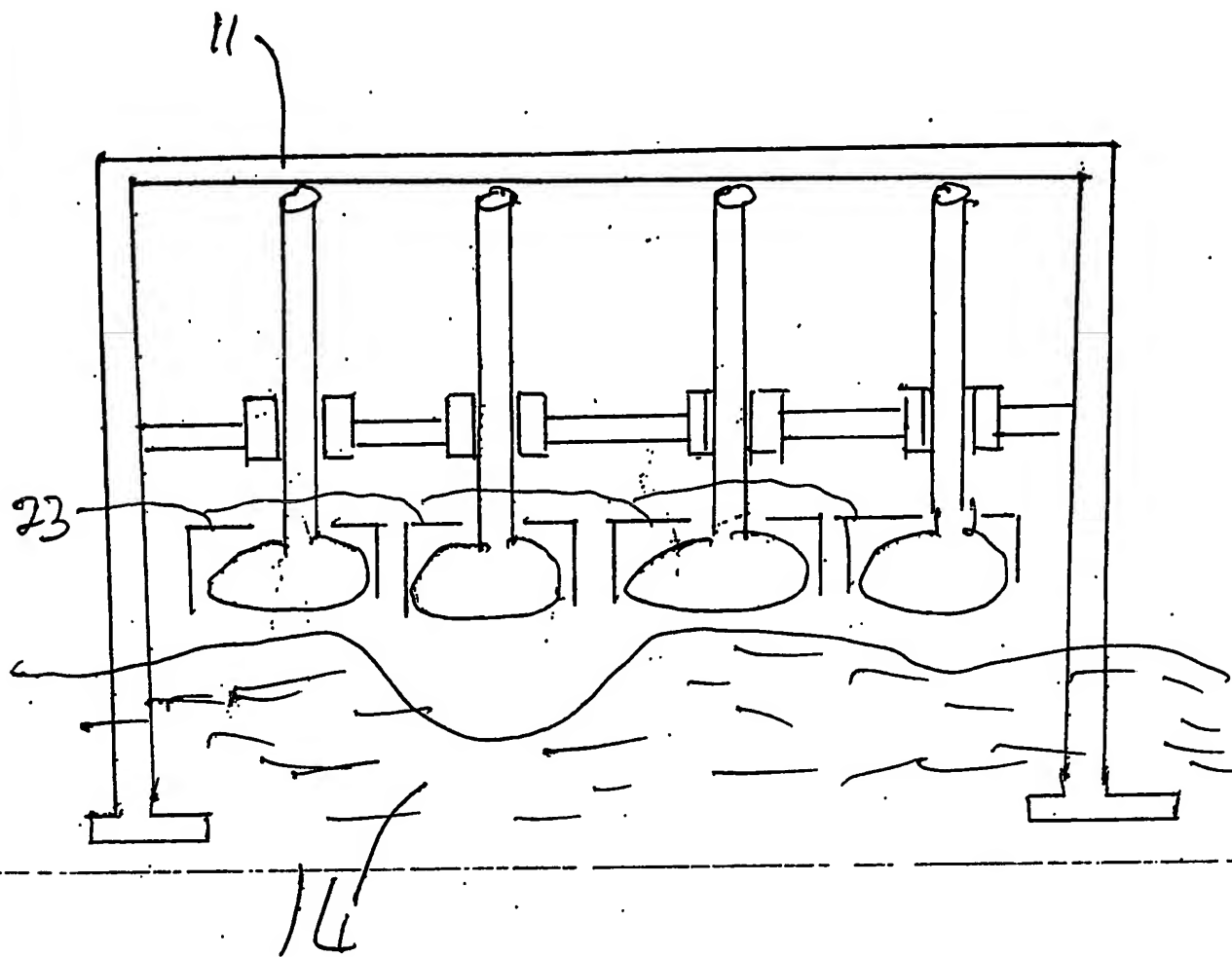


Fig 3

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Hans-Peter Grombke KG

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